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LIVESTOCK INDUSTRY IN JAPAN

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INTRODUCTION

Japanese farmers are among the world's best. Yet, in one branch of farming--animal husbandry--they failed to display the skills so readily apparent in other fields. Farming is limited to the cultivation of the soil for the produce derived directly from it, and agriculture is little associated with animal husbandry except as a source of draft power. The preponderance of highlands alone suggests a thriving industry, yet a visitor is struck by the absence of herds and flocks grazing upon them. In thrifty Japan this is surprising, but the fact is that, with the exception of Hokkaido, one does not see a herd of cattle, or a flock of sheep.

Based on a report by Wolf I. Ladejinsky, Agricultural Attache, Office of U. S. Political Advisor, G.H.Q., SCAP, Tokyo, Japan.

Animal numbers are small, and the pasture lands are poorly developed and not well utilized. The number of farmers whose principal source of farm income is livestock raising is only 34,000 or 0.6 percent of the total farm population. Farmers raising livestock exclusively account for not more than 3 percent of all the livestock raisers. The average yield of milk and meat per animal is low compared with other countries. Animal foods, other than fish, are of no significance in the diet of the Japanese people. The consumption of meat, eggs, and dairy products does not exceed one percent of the total volume of foodstuffs. Only in recent years has there developed an appreciation of animal husbandry as a means of increasing the volume of protective foods, as well as means of raising the farmers' income.

Approximately 2.5 million draft animals of work age are available to operate the 15,000,000 acres of cultivated land. If draft animals could be used at or near capacity, the current population of horses and cattle would be adequate to furnish draft power for farms. However, the maldistribution of draft animals, the pocket-sized farms, and the lack of coordination between draft animal owners and nonowners operate to prevent capacity utilization. In 1949, an estimated 2.1 million farm families, or 35 percent of the total, had cattle; families with horses, hogs, sheep, and goats represented 15, 8, 5 and 6.5 percent respectively, of the total number of farm households. The average number of cattle per farm household is 0.4; of horses 0.2, and of hogs 0.1.

TABLE 1 - Number of Livestock, by Types, 1934-51 1/
(1,000 head)

Year	Dairy Cattle	Draft-beef Cattle	Horses	Hogs	Sheep	Goats	Rabbits
1934	160	1,424	1,377	850	33	108	ND
1935	166	1,488	1,360	932	44	123	ND
1936	170	1,570	1,340	978	57	137	ND
1937	173	1,622	1,160	949	76	148	ND
1938	178	1,685	1,103	997	91	160	4,941
1939	186	1,749	1,128	934	110	168	6,597
1940	190	1,840	1,150	667	134	182	5,605
1941	ND	ND	1,090	ND	ND	ND	4,379
1942	223	1,940	1,046	501	155	215	3,360
1943	257	2,120	1,173	391	176	242	3,227
1944	265	2,138	1,191	310	181	252	2,580
1945	239	2,079	1,121	206	180	250	1,708
1946	163	1,827	1,049	88	196	222	1,916
1947	159	1,830	1,054	100	239	278	2,808
1948	171	1,932	1,091	205	291	348	3,584
1949	202	2,092	1,072	488	327	458	2,695
1950	213	2,276	1,122	716	390	485	2,203
1951	240	2,257	1,113	560	482	538	1,697

1/ For 1934-44 includes animals on farms only; for 1945-51 includes all animals, on and off farms, except 1945-48 data for sheep, goats, and rabbits include animals on farms only. Data for 1950-51 are census numbers of animals on farms plus estimated number of animals off farms.

ND-No data available.

SOURCE: Livestock Bureau, Ministry of Agriculture and Forestry.

During the past two decades considerable effort has been made to increase livestock production, but that effort has not been accompanied by corresponding efforts to improved feed production. The large population in relation to tilled area has given rise to the belief that it is feasible to raise only crops which can be used directly as food. Although land in limited, grazing follows a pastoral pattern which is probably a heritage from continental Asia. Pasture and harvested forage is what nature supplies. While some grazing and cutting of forage take place, there is no culture in the sense of seeding, fertilization and careful management. With few exceptions, the utilization of pastoral land is basically primitive.

Tradition has also had its influence. Japanese farmers have had little experience with livestock, and keeping animals is difficult for them. Japanese experiment stations have served as great innovators, and within memory have succeeded in nearly doubling yields of rice. But they have not been successful in the field of animal husbandry where results are not so significant or transmitted so successfully for the farmers' use. The separation of "agriculture" and "livestock" in research organizations has resulted in a certain neglect of investigations bearing on livestock.

The reasons for the lack of progress in the livestock industry in Japan may be summarized as follows: First, there is a lack of good natural pasture land because the native wild grass is coarse, unnutritious and generally crowds out the valuable forage grasses. Second, in a densely populated country such as Japan, with limited food resources, the caloric food value that can be obtained from an acre of cereal crops is six to seven times larger than the meat or milk calories that can be obtained by feeding that grain to animals. For this reason, the use of arable land for production of livestock feed has not been encouraged. Third, the market for animal products is essentially limited; the Japanese people as a group have yet to acquire a taste for dairy products, while most of the people cannot afford meat. Fourth, where human labor is abundant and cheap, the question of animal husbandry as a source of draft power is not as important as it might be otherwise. Fifth, the Japanese farmers and farm leaders have concentrated so much on rice culture that, until recently, the country's livestock possibilities, limited though they are, did not receive the attention they deserve. Sixth, the Japanese Government has played a major role in the industry's development, but until the end of the war, it had concentrated on horses, mindful of the needs of the military and the interests of the influential horse breeders of Hokkaido.

In the past few years, and under the strong influence and pressure of the Agriculture Division, Natural Resources Section, SCAP, there has developed a greater understanding of the benefits to be derived from all types of livestock, both quantitatively and qualitatively. Farmers are beginning to appreciate that, even though livestock production will never be their principal enterprise, it can serve two useful purposes: improve the diet of the farmers (and of the Japanese people as a whole) which contains little animal protein, and raise their standard of living through higher incomes. Interviews with farmers and an examination of some village farm programs bear ample testimony to this postwar development.

The deterrents to livestock husbandry in Japan are numerous and formidable, and chief among them are the poor quality of roughages and shortage of feed concentrates. This constitues the crux of the livestock problem although other elements, notably breeding, add to its complexity. It is believed, however, that improvements can be achieved. Hokkaido and northern Honshu offer the best opportunity. Hokkaido in particular holds the promise for considerable enlargement of its dairy industry. Climatic conditions, although relatively unfavorable for many crops, especially rice, are good for dairy purposes. In addition, Hokkaido is the one Japanese region that is sparsely populated, and the average size of the farms is four times that of the rest of the country. These larger farms provide better opportunity for production of roughage and concentrate feeds, and for diversified farming operations conducive to maximum food production.

It cannot be expected that the rest of the country (the central and southern parts of Honshu, Kyushu, and Shikoku) will experience anything like the progress anticipated in Hokkaido and northern Honshu. Yet some advance in the production of dairy cattle and small animals, despite the limitations imposed by the tiny farms, is likely to occur. On the question of more and better livestock, complete agreement exists among the legislators and the livestock technicians who transmit the results to the farmers, and create among them a substained interest in animal husbandry. The history of Japanese agriculture is replete with instances of successful "drives" initiated from above, especially when the effort was directed to meet a "felt need", even though such needs were not clearly crystallized in the minds of all the farmers.

Underlying the whole effort of making the Japanese farmers more livestock-minded are numerous technical handicaps which must be overcome or their worst features eliminated. It is the considered opinion of Japanese and foreign specialists that to deal with these problems successfully the following measures are needed:

1. Increased and improved forage for livestock, including improved range management.
2. Expansion of the national artificial insemination program so that all farmers will have access to superior sire services.
3. Encouragement among farmers of increased production of small animals, particularly sheep, goats, and chickens.
4. Application of all feasible control of animal diseases.
5. Development of a workable extension program dealing with livestock.
6. Encouragement of the use of dairy animals for draft purposes where feasible.
7. Government financial assistance to farmers for purchase of livestock and for improvement of pasture land.

NATURE AND PROBLEMS OF THE ANIMAL HUSBANDRY

The livestock industry in Japan historically has been small and of minor importance as a food source when compared with the production of farm crops. Prior to the Meiji Restoration in 1868 the Japanese people consumed almost no meat or milk. Improved breeds of dairy cattle had not been introduced into Japan. Livestock were maintained almost exclusively as sources of draft power and manures for the production of food crops. With the exception of dairy cattle, the same condition still prevails. According to the agricultural census of August 1, 1947, approximately 83 percent of the horses, 86 percent of the draft cattle and 15 percent of the dairy cattle were used for draft purposes on the farms. High quality breeding stock has been introduced since the Meiji Restoration, but with indifferent results. The animal population has increased very slowly, and animal feeding and breeding continue to be unresolved problems.

Scope of Operation

The term, "herd of cattle" is applicable only to Hokkaido. According to the livestock census (February 1949) 48 percent of all the dairy cattle raisers with 50 head or more and 52 percent of all the horse raisers with 50 head or more are in Hokkaido. In most other parts of the country one or two animals per farm is the rule. For the country as a whole, farmers with one and two head of dairy cattle represent 74 and 17 percent of all the dairy farmers, respectively. The one-horse farmers are proportionately even more numerous, and approximately the same can be said of owners of other types of livestock, excluding chickens. It is significant that, outside of Hokkaido, 62 percent of all the dairy cattle are on farms not exceeding one cho, [1] and 86 percent of all the horses are on farms not exceeding two cho. A similar pattern is typical of other types of livestock.

The Government and Animal Husbandry

The livestock industry, like virtually every other industry in Japan since the Meiji Restoration, has been given substantial Government assistance and made subject to Government control. The Japanese Government has taken steps to increase the number and improve the quality of livestock through the importation of breeding stock and the establishment of livestock experimental stations and livestock breeding farms. Through the agents of prefectural governments working closely with the agricultural cooperative associations, farmers were encouraged to adopt approved livestock practices. Information was disseminated among farmers on the control of contagious animal diseases. In addition, certain laws established standards pertaining to animals to be used for breeding purposes, and stipulated the type of breeding services to be provided for farmers from national or prefectural livestock farms. The assistance rendered by the Government was essentially along technical lines.

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[1] One cho equals 2.451 acres.

This aid was accompanied by rigid governmental or semi-governmental control of the industry. A variety of control associations were created, such as the Central Horse Society for Japan, Japan Dairy Producers Association, Japan Animal Industry Promoting Company, Ltd., Japan Rabbit Industry Control Company, Ltd., Japan Hide and Tannery Control Company, Ltd., Egg Distribution and Control Association, and a number of others. To these should be added direct legislative controls, such as the Stud Horse Control Law, the Bull Examination Law, the Livestock Market Law, and the Horse Registration Law.

There is general agreement among those with intimate knowledge of animal husbandry in Japan that the benefits derived by the farmers were not that which might be expected or desired. This was due in part to misdirection of effort. The disproportionate emphasis on horses, the neglect of small livestock, and the failure to develop among the farmers an appreciation of the value of livestock raising as part of farm management--all are cited in substantiation of that point of view.

Before the end of the war Japan had a total of 31 National Livestock Farms, but of that total, 23 were horse farms; 5 were chicken farms and three were sheep farms. Not one farm was devoted to dairy or draft cattle. In the course of those years nearly four-fifths of all the appropriations were spent on the development of the horse industry, which was chiefly concerned with types most suitable for the Army and for horse racing. The work of the one National Experiment Station and its two branches concentrated mainly on breeding; the problems of better feed, management of pasture land, and livestock management on the farms received scant attention.

Many informed persons, including a number of Japanese and American specialists, believe that control associations and legislation did not benefit the farmer engaged in animal husbandry. The associations exercised rigid control over processing and marketing of livestock products. The moving spirits of such organizations were businessmen, processors, and the big livestock raisers. The farmer with a head or two of livestock had little voice in the control associations and the legislation that sanctioned their activities, and enjoyed no advantages from their monompolistic trade practices.

Types of Livestock and Numbers

Draft cattle, dairy cattle and horses constitute the main types of livestock in Japan. Hogs, sheep, goats and poultry are of much less importance. Beginning with the 1870's the Japanese have been importing animals to maintain or improve quality. Dairy cattle stock have been brought to Japan from the United States; sheep from Australia; hogs from England and the United States, and chickens from the United States. However, although the Japanese usually imported only high-priced quality animals, the breeders generally failed to perpetuate in their herds the improved strains of the imported animals.

Draft Cattle

Except in Hokkaido, draft cattle are used extensively on farms throughout Japan. They are preferred to horses for farm use because they require less feed and are more suitable for meat; they furnish the main supply of the country's beef and veal. The common breeds of draft cattle are either black and native Japan or brown Korean stock. The cattle are fed mainly on roughage feed, such as hay and straw, or crop by-products such as sweet potato vines. One to two kilograms per day of concentrates such as rice bran, wheat and barley bran, and soy bean cake are fed when the cattle are working.

Draft cows usually are bred each year. The common practice is to keep a cow for four or five years, after which it is sold for beef. Only about 10 percent of the total cattle slaughtered are calves. Male calves are castrated, kept for almost two years, and sold for beef. Although steers are generally not used for draft purposes on farms because they are considered too large, they are preferred for use in the cities. Bulls of draft breeds are usually owned by the prefectural government or by the agricultural cooperative association; few are privately owned.

The numerical changes in the cattle population in the past two decades are shown in Table 2. Excluding the immediate postwar decline, the trend in numbers has been upward. This is explained by the shortage of labor just prior to and during the war, decrease in the number of horses for farm purposes, the tendency to replace hogs and poultry with draft cattle as a source of meat, and greater manure requirements. Even during the war when the feed situation was extremely difficult, a record number of 2,138,000 cattle was reached in 1944, compared with an annual average of 1,557,000 during 1934-1938. The sharp reduction following the end of the war, occasioned mainly by reckless slaughter, was checked in 1947, and by 1950 the number of cattle reached 2,276,000 exceeding the record year of 1944. The quick recovery can be traced to a strong wartime trend of cattle replacing horses on the farms of northern and central Japan, which in turn was caused by the requisition of horses to meet the needs of the army. The improvement in the economic position of the farmers following the land reform and the rise in the price of foodstuffs, have contributed to the increase in the number of cattle and other types of livestock. The rising trend is likely to continue because of the higher prices that draft and beef cattle command. Despite this recovery, the number of draft cattle does not meet current needs. The Japanese specialists are rather reluctant to venture an estimate of requirements, but judging by the number of farmhouseholds in relation to the number of draft cattle, and the MAF's 10 year plan to increase the cattle population by a few hundred thousand head, it would appear that the number of draft cattle could advantageously be increased. This opinion was expressed by farmers in discussions with the reporting officer.

Dairy Cattle

Dairy cattle in Japan have a relatively brief history. They were first introduced into Japan in 1872 when a number of Shorthorns were imported. Because of foreign breeding stock, about 90 percent of all dairy cattle are currently of the Holstein-Friesian breed; of the remaining 10 percent, approximately half are Hyshires and the remainder are other European breeds.

Although dairy cows are kept in every prefecture, the geographical distribution is very uneven. Hokkaido alone accounts for 26 percent of the total; next in importance with 15 percent is the Kita-Kanto-Tosan region of Honshu, which comprises the prefectures of Ibaraki, Tochigi, Gumma, Saitama, Chiba, Yamanashi, Nagano and Gifu. Except in Hokkaido, few Japanese farmers engage in dairy farming as a main occupation. Not more than 135,000, or slightly over two percent of the total number of farm households, have dairy cattle. Only in Hokkaido is the ratio as high as 10 percent.

Since the war, recovery in this branch of the industry has been much slower than in the case of draft cattle. The highest number on record was attained in 1944 when the dairy population was 265,000. The principal reason for the war-time growth was a rising urban demand for milk products. The sharp decline since 1944 was caused by the cessation of importation of feedstuffs, especially from Manchuria, and the slaughter of a large number of animals. The gradual rise in numbers since then must be attributed to favorable Government price policies, a feed rationing program that favored dairy cattle, a better utilized and more abundant roughage supply, improved dissemination of information among farmers on the importance and profitability of raising dairy cattle, and the willingness of some of the farmers to put that information to test. But even under the impact of these favorable conditions, the 1950 numbers were still only 80 percent of the 1944 peak.

The industry continues to be affected by a shortage of concentrate feeds. Under the best conditions, a Japanese cow consumes only about one-half pound of concentrates per day, the concentrate consists of rice bran, wheat bran, and soybean cake. Roughage feeds upon which the animals depend usually include hay, pasture grasses, root crops, and various crop by-products. Pasturing of dairy cows in Japan is not a common practice since they are usually kept in barns throughout the year. During the growing season, grasses and forage crops are cut and fed green. This method of feeding is well adapted to the conservation of manure, which is the primary concern of most dairy cattle owners. The average cow in Japan is a poor milk producer. In the United States a similar Holstein type cow yields about four gallons per day, whereas in Japan the yield is about two gallons.

Considering the demand for milk and milk products, greatly stimulated in the years of the Occupation, a doubling of the current small population of dairy cattle is not unlikely. Progress, however, depends upon the improvement of the pasture and grasslands of Japan and the greater availability of feed concentrates.

Horses

Horses are employed in Japan both for agricultural and non-agricultural uses. They are widely used in agricultural work in Hokkaido and in the Tohoku 2/ and Hokuriku 3/ regions where the time between the melting of the snow and the planting of rice is very short; or where farmers must prepare the land for rice planting immediately after the harvesting of wheat and barley. Horses are indispensable workstock for farmers with a substantial acreage, as in Hokkaido

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2/ Aomori, Iwate, Miyagi, Fukushima.

3/ Akita, Yamagata, Niigata, Toyama, Ishikawa, and Fukui.

where they are used for draft purposes almost exclusively. The horse breeding program of Japan since the Meiji era (1868) was designed to produce horses best suited for the army. Such horses, however, were apt to be too large for farm purposes, not tough enough under adverse conditions on the farm, inefficient in feed utilization, and more susceptible to diseases.

In the past 50 years, horses in Japan have been crossed with many foreign breeds, until at present no definite native breeds exist. Purebred horses are raised mainly at the government horse farms. Breeds which are raised at these farms include Arab, Anglo-Arab, Anglo-Norman, and Percheron. Draft horses have been influenced mainly by the French breeds, Anglo-Norman and Percheron. The weight of farm horses is between 350 to 400 kilograms, and that of horses used in cities is between 400 to 500 kilograms.

As is the case with draft and dairy cattle, horses are kept in stables throughout the year. Except in Hokkaido and northern Honshu, there is little pasturing. Roughage used for horse feed generally includes rice straw, wheat straw, hay and wild grasses. Grasses and other fodders are usually cut and fed green during the growing season. Types of concentrate feeds used for horses vary throughout Japan. Sweet potatoes are commonly used in Kyushu, oats in Hokkaido, and barnyard millet in the northeastern part of Honshu. In all sections, barley, maize, soybean cake, rice bran and wheat bran are fed. Approximately 25 bushels of concentrates are consumed per horse per year when average work is being done, and double that amount by horses doing continuous heavy work.

In the horse-raising sections, mares commonly produce a foal every two years. Stallion service is secured from either a government or privately owned stallion. Only government-inspected stallions may be used for breeding purposes. The majority of the stallions are raised on government farms and are sold to the agricultural cooperative associations. Farmers wishing to raise stallions must have them inspected when they are two or three years of age. If they meet specifications as to type and quality, they are usually purchased by the government.

The changes in the number of horses before, during, and after the war were less affected by the feed situation than were those of draft and dairy cattle. After the war, horses used in cities have suffered most from the shortage of feed since they have been more dependent on imported concentrates than are farm horses. According to data collected by the MAF, commercial feed represents 89 percent of feed consumed by dairy cattle, and 52 percent by draft cattle, whereas commercial feed consumed by horses represents from 22 to 40 percent of the total feed. The MAF officials estimate that considering the small-scale type of Japanese agriculture, existing numbers approximate requirements. There is an estimated need of 100,000 to 150,000 horses for transportation and other uses, such as horse racing, a sport greatly enjoyed by the Japanese. In 1950 the number of farmers who owned horses was estimated at 937,000 or 15 percent of the total farm families. Geographically, Hokkaido ranks first with 25 percent of the horse population; next in order are the prefectures of Iwate (6.5 percent), Fukushima (5.5 percent) Akita (5.0 percent) and Tochigi (4.5 percent).

Hogs

Hog raising in Japan is traced to the beginning of the Meiji era when the habit of meat eating was first established. Hogs are raised in every prefecture, but Hokkaido, Ibaraki, Chiba, Tokyo, Shizuoka and Kagoshima are the main sources. The Yorkshire and the Berkshire breeds predominate, the former accounting for 90 percent of the total. The sharp decline in hog numbers during and particularly after the war and the relatively slow recovery since then is shown in table 1. As in the case of other types of livestock, lack of feed explains the decrease in numbers.

The 716,000 hogs (1950) are distributed among 5.5 percent of farm families. Before the war some hogs were raised on a larger scale by producers located on the outskirts of the large cities, but with the decline in the amount of garbage during the war this type of production declined. The common practice of the farmer who raises hogs is to sell all but one or two of the young pigs to other farmers at weaning time. Hog feeds used in Japan include soybean cake, rice bran and wheat bran, garbage and filed crop residues. Farmers eat little pork and, for economic reasons, prefer to sell the hogs they produce. Popularization of hog raising is of great significance not only from the point of view of increasing the meat output, but also as a means of strengthening the economy of the small farms (one acre or less) which cannot maintain large animals. To date, progress has been slow. The farmers view hog-raising as a non-essential activity, and this may explain the conservative goal of 1.3 million hogs in 1954, set by the government.

Sheep

The sheep industry in Japan is small in spite of an almost uninterrupted increase in numbers in the past decade. In 1951 an estimated 482,000 sheep were distributed among 225,000 farmers. The steady increase in the number of sheep during and since the war is due mainly to the pressing need for wool. Total production of wool in 1950 is estimated at 2,400,000 pounds, or approximately four percent of domestic demand.

About 90 percent of the sheep raised in Japan are of the Corriedale breed, and the remainder of the Merino breed. Until 1930 Merino sheep were imported, but with the emphasis on the dual purpose sheep--wool and meat--the Corriedale type increased. The foundation stock of all sheep was imported chiefly from New Zealand and Australia. With few exceptions, sheep are not grazed; instead they are housed during most of the year. In the growing season, they are fed cut grass, and in the winter months hay and small amounts of grain. Sheep are a minor source of meat; they are raised mainly for their wool and the value of the manure.

Despite the high quality of imported breeding stock, the quality of Japanese sheep is considered poor. Since sheep are relatively new in the country's animal husbandry, knowledge with respect to breeding, feeding and management is limited. Also, with the emphasis on numbers, little selection of breeding animals has taken place. In sheep raising (as in other types of livestock) poor feed precludes high quality. Perhaps with some improvement in feeding and breeding at least 2,000,000 sheep appear feasible on Japan's 6,000,000 farms.[4]

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[4] R. R. Ritchie, "Plans for Livestock Development in Japan." Memorandum prepared for Natural Resources Section, General Headquarters, SCAP, June 27, 1950.

Goats

Goat-keeping in Japan has a long history, going back to the days when goats were first introduced from China, Manchuria and Korea. The animal was utilized chiefly as a source of manure. Goat-keeping as a source of milk began with the turn of the century, when the Saanen stock was introduced from Switzerland. Later (1935) England became the chief source. The small size of the animals is suitable for the small farm of Japan. They forage on brush, grass, hay and crop waste products. They are fed no grains and only very small amounts of feed concentrates. But although goats are less demanding in food, like other animals in Japan they are inadequately fed. Farmers know little of balanced rations, and furnishing the animals bulk as against quality feed is their main concern. The results are low production of milk, susceptibility to disease, and a life span of less than four years in most cases. The goats are mainly concentrated in mountainous areas. In 1950 Nagano prefecture had 12 percent of the total. Gumma, Nagasaki and Yamanashi accounted for 6,5.5 and 5 percent, respectively.

The steady increase in numbers before, during and after the war is due to the fact that roughages can be converted into food by goats, as few other farm animals can do. There is reason to believe, however, that the nutritional condition of the goats has deteriorated with malnutrition prevalent. The short lactation period of about five months compared with the customary ten months is an indication of malnutrition and contributes to the relatively high expense of production. Despite the recent rise in numbers, less than six percent of the farmers have goats--and most of these have only one. The reasons are many: the interest in goat milk is limited; many farmers have never quite recognized the animal as a source of milk; yields are low, ranging from 275 to 500 pounds per year whereas 1,200 to 1,500 pounds should be possible; disease, notably lumbar paralysis, is widespread. Lack of feed and shortage of labor are other objections to goat keeping. 25 percent of a group of farmers (1,790), picked at random by the livestock Bureau, disclaimed any interest in the animal because of lack of feed, while 27 percent cited insufficient labor as a limiting factor. The farmers who own them indicated the following reasons for keeping goats: as a source of manure and milk, 38 percent, and miscellaneous reasons, 2 percent.

Goat specialists in Japan are of the opinion that the animal could become an important source of animal protein, and that a goat population of two or three million is feasible, if feeding is improved. The feed supply, particularly legumes, will have to be increased and its quality improved to obtain a larger goat population of high quality.

THE FEED SITUATION

The statistical data indicate that livestock numbers have been rising, but from a qualitative point of view the industry has shown little improvement, chiefly because of the shortage of feed concentrates for winter feeding, and the poor quality of the roughages.

Feed Concentrates

Most of the stock-raisers are one or two-acre farmers, bent on producing their own basic food requirements. They can spare very little grain for feed concentrates, other than rice bran and wheat bran, and are compelled to resort to commercial feeds, both domestic and imported.

The concentrate feed requirements, in pounds per head per year, are as follows: for dairy cattle, 1,200; draft cattle, 880; horses, 1,100; swine (breeding), 1,100 pounds. Before the war, concentrates accounted for 30 percent of the total feed volume, while the ratio of domestic to imported concentrates was 70:30. The latter represented from 1,000,000 to 1,100,000 metric tons of corn, rice and wheat bran, kaoliang, and soybean and rapeseed cake. Imported feed was most significant as a major factor in maintaining livestock because of its protein content. After 1945 imports practically disappeared; only in 1949 did Japan import 300,000 tons, both in the form of feed and as by-products of grain imported for food. The respective figures for 1950 and 1951 are 435,000 and 715,000 metric tons. The latter figure is still 30 to 35 percent below prewar imports. Since the end of the war the farmers have made a considerable effort to increase the availability of indigenous feed concentrates, and the MAF estimated the 1950 availability at 2.6 million metric tons, or close to the maximum they are likely to produce in the immediate future. If imports are to remain at present levels, then limited supplies of concentrates probably will continue to be an important element affecting livestock production in Japan. Moreover, even if the volume of prewar feed concentrates should be equalled, a larger livestock population could be achieved only at the cost of further deterioration in quality.

Forage Feed

The concentrate feed shortage is accentuated by the poor quality of roughage produced in Japan. Most of it is cut and brought to the livestock in stables, and it comes from field borders and dikes, miscellaneous corners of land too small to classify as pasture, from open, level pasture lands, hillsides and forest areas. Straw, potato vines and the like are part of the roughages. Data on the area used for grass cutting as contrasted to grazing are not available, but very rough estimates show that, exclusive of Hokkaido, about three-fourths of the range land is used for cut fodder and compost. In Hokkaido about 15 percent of the area is thus used. Much labor is involved in cutting the grasses and in transportation. The harvesting, as a rule, is done by hand with knife or sickle, and the transportation by man or beast, or hauling with cart or truck.

The principal forage grasses are "susuki," common on nonforested areas; "shiba" and "chi-gaya," widely distributed over Honshu and Kyushu. Bamboo grass, known as "sasa," used as forage throughout Japan, and "hagi," a native bush clover, are the principal leguminous plants. In a few places, notably in Hokkaido, red clover, timothy and other forage plants are grown for hay. However, the poor weather conditions generally prevailing prevent the curing of good quality hay.

The common feature of nearly all of these species is their poor quality. A close student of the pasture lands of Japan stated that "Native grass is relatively low in feed value even when harvested at the most favorable stage of growth. When harvested at or after full maturity, as it is throughout all of Honshu and Kyushu, the resulting product is low in both palatability and nutrition and is barely capable of sustaining animals throughout the winter without supplemental feeding." 5/ The principal reason for the delayed cutting is that the heavy rains and high humidity prevailing in the spring make it impossible to cure cut grass without spoilage from mildew. The writer concluded that "herein lies the biggest single obstacle to realizing full value from the native forage of Japan. In addition, it imposes some very real limitations ... against future expansion in number of livestock dependent on stored native forage in southern Japan." 5/

Grazing

Grazing is practiced chiefly in Hokkaido and, to a more limited extent, in the northernmost part of Honshu. The grazing lands are either open spaces covered with coarse grasses, or forests with edible plants. The carrying capacity of such pastures is low, but not much overgrazing occurs partly because the available supply of forage is in excess of the demand and partly because many of these lands are too remote and inaccessible. The MAF has calculated that Japan has a total of 7,300,000 acres of land suitable for grazing; that a cow requires 6 acres for pasture on open grazing lands and 8.5 acres on forest land, and horses an average of 8 acres of open pasture and 10 acres of forest land. On that basis, the MAF estimated that 900,000 grazing animal units could be supported during the grazing season. In reality only 300,000 grazing animal units were in pasture in 1950. This does not necessarily mean that the grazing resources were sufficient for an additional 600,000 animal units; the MAF's estimate is a mere approximation since no real survey of Japan's pastures has ever been made. Moreover, the roughage producing capacity may well include forage for animals which are not actually on the pastures.

The consensus is that the forage can be improved by cultural treatment of native grasses, the use of improved species, grazing management to control unpalatable and undesirable plants, and through fertilizer application. Experiments in Japan (Takahagi Station, Ibaraki Prefecture) have shown that increased production can be secured by fertilizing the wild grasses. A treatment of 120 kilograms per hectare each of nitrogen, phosphoric acid, and potash resulted in an increase in yields of from 7,000 to 20,000 kilograms per hectare. Careful adaptation of cultivated grasses such as timothy, orchard, smooth broom and Kentucky blue, and legumes such as red and white Dutch clover have shown good results. As with wild species, the possibilities for obtaining large yields with the cultivated species have not been explored except in Hokkaido. In that island prefecture the suitability of red clover may be illustrated by the expansion of the acreage from 17,000 in 1941 to 75,000 in 1950.

5/ Walt L. Dutton, "Management and Administration of Range Lands in Japan." Natural Resources Section, General Headquarters, SCAP. Preliminary Study No. 60 (page 16).

In the main, particularly in Honshu, Kyushu and Shikoku, the work of improving the pastures is yet to be done. One of the main difficulties is that the greater part of the pasture lands is in the high, remote and almost inaccessible back-country. Even if accessible, the clearing of land covered with a dense growth of grass and shrubs as the first step in soil preparation, and the maintenance required to keep out the wild grasses, call for excessive costs hardly warranted. The conclusion, with which the Japanese experts are in full accord, is that "Under prevailing circumstances and conditions, artificial revegetation is not a practical possibility on high native lands. For this reason all range seeding programs should be confined to lowland areas, particularly levels and such other accessible areas as may be available near or interspersed with agricultural." 6/

If the above recommendation is put into effect, if the trials are successful, and if the results are widely propagated, a real beginning will have been made in the substitution of improved and high quality species for coarse, non-nutritious grasses. An efficient forage supply would thus be insured. In the meantime, the increase in numbers and the improvement in the quality of the livestock will continue to depend upon Japan's ability to obtain an increased supply of feed concentrates. Considering Japan's mounting food requirements, little more can be expected in the way of indigenous feed concentrates, and the dependence upon the imported type will be greater than before. It seems, therefore, that only a qualitatively improved forage supply, buttressed by larger feed imports, will provide the basic condition for a larger and better livestock population in Japan.

LIVESTOCK BREEDING

Livestock in Japan is generally inferior to that of the United States and other major livestock producing countries. The cause, other than feed shortage, is poor breeding. Dairymen in the United States are of the opinion that economic milk production, for example, is 70 percent feeding and 30 percent breeding. The Japanese understand the importance of the latter element, and they have imported many excellent breeding animals in the past. Yet, MAF livestock officials have been saying that breeding "runs out" in Japan. This is the more surprising in a country which supports 240,000 head of dairy cattle, more than 2,000,000 draft cattle, and more than a million horses, and spends a good deal of money to support numerous livestock facilities of one kind or another.

The explanation lies in the breeding work carried on in Japan until the late 1940's. Many uncoordinated experiment stations and breeding farms were operated by the Japanese Government at the time of surrender in the effort to improve livestock. The National Breeding Farms occupied large areas of land, 4,000 hectares for some of the larger ones, inefficiently operated in most instances, and over-staffed. An American livestock specialist, in a report of his field trip observations, mentions a government poultry farm with 48 officials and employees to supervise and care for 900 chicken and 40 rabbits. Moreover, the so-called livestock farms financed by the Government were essentially horse

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6/ Walt L. Dutton, "Management and Administration of Range Lands in Japan." Natural Resources Section, General Headquarters, SCAP. Preliminary Study No. 60 (page 14).

breeding farms; livestock, as distinguished from horses, was often not even a minor consideration. This fact is quite indicative of the inadequacy and misdirected effort of animal breeding in Japan and may explain the remark of an American specialist, expressing a view shared by his Japanese colleagues, that "the livestock produced on these farms is not superior and frequently is inferior to farmer-produced livestock." 7/ The statement was particularly true of dairy cattle. Breeding animals, imported for many years prior to the war to maintain superior bloodlines, were not well utilized, and the quality of animals declined markedly after imports of breeding stock were terminated altogether by the war.

ANIMAL DISEASES

Japanese livestock is subject to a great variety of diseases. A detailed list of the type of disease by animal category, and types of infectious diseases and the number of cases are shown in the attached appendices I and II, as submitted by the Livestock Bureau. The principal diseases as revealed by the current research activities in Government Experiment Stations for Animal Hygiene are as follows: infectious anemia of horses, bovine influenza, rinderpest, bovine tuberculosis, propagation and abortion of domestic animals, newcastle disease, hog cholera , Japanese B encephalitis of animals, bovine mostitis, osbeomalacia, infectious diarrhea of cattle, goats and fowl, infectious pneumonia of goats, lumbar paralysis of goats and sheep, listeriosis, parasitism of domestic animals. Current research activities extend also to production of dry vaccines, and electro-microscopic studies on germs of important and unknown diseases.

All government research in animal diseases is coordinated under the Government Experimental Station for Animal Hygiene and its branches, which are organized, financed and directed by the Livestock Bureau of MAF.

MARKETING OF LIVESTOCK

The marketing of livestock in Japan is such that the producer's profit in raising and selling a head of cattle is small. Most crop marketing in Japan is done through the agricultural cooperatives, but in buying or selling of livestock the cooperatives play a minor role. The private dealer and a host of middlemen separate the livestock raiser from the buyer, and, by the same token, from a good deal of his profit. The marketing channel is seldom from the producer to the ultimate user; the common practice calls for a livestock dealer and sometimes there is yet another middleman. In the case of beef cattle, the Livestock Bureau shows the following chain between the producer and consumer; producer, livestock dealer, middleman, wholesaler, slaughterhouse, middleman, retailer and consumer. According to investigations made by the Livestock Bureau, the price of the ultimate user is from 25 to 60 percent and occasionally 70 percent above that received by the livestock raiser. Prices have been steadily rising since the end of the war, and particularly since the beginning of the war in Korea. Current prices of draft cattle and of horses are estimated to be at least 20 percent above those of June, July and August of 1951.

7/ R. R. Ritchie, "Livestock Program for Japan," Memorandum prepared for Natural Resources Section, General Headquarters, SCAP, December 23, 1949.

The farmers and the Livestock Bureau know only too well that the marketing system is in need of adjustment. But to date nothing has been done to remedy the situation. The Livestock dealers and middlemen are strongly entrenched economically, and farmers continue to rely upon them as they have done in the past.

MEAT PRODUCTION AND CONSUMPTION

Livestock numbers in Japan being what they are, and meat imports never exceeding 17,000 metric tons (1936), meat production and consumption are very small. Commercial meat production in 1950 was the highest on record, 149,000 metric tons, or 73 percent more than in 1949 and 19 percent more than the average for 1931-40. In 1937, when meat consumption was at its peak, the annual per capita consumption was estimated at less than five pounds. Consumption in 1945 reached a low point with only slightly over one pound; the sharp recovery since then has continued and in 1950, averaged four pounds. Approximately eight to ten percent is horse meat. The above data do not include the meat consumed on the farms, but the volume is negligible, most of the meat being consumed in the urban centers. It may be inferred that per capita annual consumption in Tokyo in 1950 was over eight pounds; this is double the national average, but a small volume of meat consumption indeed. Figures show also a sharp drop in meat consumption in the principal cities of the country. The sharp rise in retail prices is probably the principal reason.

Livestock raisers are not permitted to kill animals and sell the meat on the market. Slaughtering is a well organized, government-regulated business. Japanese law requires that meat animals be slaughtered in government-approved and inspected houses. Inspection for evidence of disease is considered adequate, although sanitary conditions do not conform with the highest standards. Currently, Japan has 70 slaughterhouses, most of which have a capacity of from 10 to 50 animals per day.

TABLE 2 - Number of Livestock Slaughtered, by Types, 1934-50
(1,000 head)

Year	Cattle	Calves	Horses	Hogs	Sheep	Goats
1934	293	28	90	937	1.3	9.2
1935	296	31	89	1,005	1.4	9.4
1936	297	34	95	1,195	1.4	11.3
1937	345	40	72	1,223	2.5	11.5
1938	362	35	40	1,168	3.0	12.4
1939	371	37	44	1,263	3.4	12.4
1940	419	43	54	1,193	3.4	11.1
1941	377	35	39	586	5.3	10.0
1942	248	32	34	419	2.9	4.5
1943	311	52	63	248	1.3	2.9
1944	244	49	66	128	0.4	1.1
1945	116	20	74	41	0.1	0.4
1946	245	11	61	50	0.2	1.8
1947	241	8	64	96	0.3	4.4
1948	233	10	64	238	0.2	4.0
1949	238	16	59	650	0.3	2.7
1950	428	41	80	1,132	2.2	1.8
1951	351	32	81	728	2.5	5.0

*(Jan-Oct)

SOURCE: Ministry of Agriculture and Forestry.

RECOVERY AND THE OCCUPATION

Notwithstanding the feed and breeding problems, the livestock population has shown a marked recovery. In part this is traceable to certain innate, albeit difficult to define, forces which affected favorably the economy of Japan as a whole in the years after the surrender. But in livestock as in other fields of the country's economy, SCAP's contribution has been vital. A number of significant improvements have been made during the Occupation by SCAP livestock specialists in cooperation with their opposite numbers on the Japanese side. To be sure, instances of pressure to secure cooperation were not lacking. This work was expressed in legislative enactments and in on-the-spot advice and guidance relating to certain problems.

On the legislative side, SCAP's principal contribution centers in the "Law for Improvement and Increased Production of Livestock" (Law No. 209, May 27, 1950). Its intent is to secure high quality breeding stock, utilize it efficiently, and thereby increase and improve the livestock population. To that end it defines the conditions under which an animal may be used for cover service, and lays down the basic provisions regulating artificial insemination service to farmers. To create order out of uncoordinated and overlapping experiment stations, stock farms and stallion depots, the Japanese Government, under strong SCAP pressure, enacted Imperial Ordinance No. 276. This ordinance designated certain establishments as National Livestock Breeding Stations, and closed down those which were uneconomic, unnecessarily competitive with private livestock breeders, and failed to provide superior sire service. The National Livestock Breeding farms were reduced in number from 31 in 1946 to 14 in 1951. The American specialists felt that they could be eliminated altogether; that the improved breeding and management programs developed by the experiment stations, combined with the work of the artificial insemination stations, would more than offset the loss of the breeding farms.

The really significant aspect of the insistence to reduce the number of the farm is the diversification of these same farms that followed. One of the 14 farms breeds horses exclusively; one, cattle; and three, chickens. The other nine are multipurpose farms, breeding cattle and hogs, or sheep, hogs and goats, or horses, cattle and small livestock. In short, the primacy of horse breeding over all types of livestock has come to an end.

The need for superior germ plasm in improving cattle in Japan was an item of much concern to SCAP technicians. With that in mind they imported, by air, semen from high quality U.S. Holstein dairy sires. Although the principal purpose was to determine the feasibility of such a method, the project helped also to stimulate among the Japanese a greater appreciation for artificial insemination work. Japan has now more than 250 government artificial insemination stations and over 1,000 privately operated stations. These make breeding services of superior sires available to farmers, otherwise unable to obtain such services. However, Japanese livestock breeders, even with superior sire services, will require several years to establish adequate breeding herds and show sustained improvement, because the breeding stock is badly run down and livestock improvement is a slow process at best.

After the end of the war, Japanese connected with the industry wished to import breeding stock, but this involved considerable expenditures. Superior dairy bulls cost from ¥300,000 to ¥600,000; male sheep ¥20,000 to ¥40,000; and stallions ¥300,000 to ¥600,000. Yet the funds set aside for this purpose by the MAF were not nearly commensurate with the cost of the animals and the minimum requirements. It was only through SCAP's insistence that a more reasonable sum was allocated. Furthermore, SCAP was instrumental in inducing Licensed Agencies for Relief in Asis (LARA) to donate 25 Holstein bulls, 49 Brown Swiss cattle and approximately 2,000 goats. The goats are used to produce maximum long time improvement in indigenous goats. The Holstein bulls generally are used for artificial insemination, and the Brown Swiss cattle are both for purebred production and for crossing with Japanese draft and dairy cattle to improve the milking qualities of these animals. More specifically, the purpose is to develop a combination draft-milk animal. Because draft cattle on many farms work only 30 to 50 days annually, the advantages of a dual purpose animal are obvious. It is rather surprising, therefore, that a goodly number of farmers object to or do not take readily to dairy cows, the theory being that cows are only for work. A good deal of education and extension work is necessary to change the farmers' attitudes and customs concerning the use of draft cattle.

With respect to the improvement of indigenous feed supplies, the efforts of SCAP specialists were limited to a study of the problem, recommendations, and exhortations. In the case of the quality of commercial feedstuffs they pressed the Livestock Bureau very strongly for the institution of an inspection system. Traditionally feedstuff has been sold in Japan with no guarantee of the nutrients contained therein. Seaweed, cornstalks, bamboo leaves and other material of doubtful feed value were ground, mixed, and sold as feed for all types of livestock. SCAP technicians were after the following: registration of feed producers and dealers, accurate labeling of contents, inspection of feedstuffs, and establishment of penalties for violations. The main purpose of the feed inspection program was to enable the farmers to determine the relative value of purchased feeds. The MAF refused to sponsor the legislation on the ground that it was necessary only when feed was plentiful; now that feed is in short supply the MAF argued that the need for this type of legislation is even less warranted.

Such, in the main, was the assistance given by American specialists to the Japanese livestock industry. How useful was it? This reporting officer has discussed the question with the specialists of the Livestock Bureau. The consensus is that it was sound and valuable both on the score of dealing with an immediate problem as well as problems of long range nature. They were particularly impressed with the practicality of the American specialists in facing a particular situation, whether in the laboratory or in the barn. During the war years the livestock people of Japan were cut off from the latest developments in their field; the American specialists filled that gap and provided their opposite numbers with a continuous flow of information. One of the means by which this was accomplished was the travel of Japanese specialists to the United States for the study and observation of American methods. On the question of the role of the National Livestock Breeding Stations or Farms, the Japanese believe that the insistence of the American specialists that these stations be reduced in number or eliminated altogether, if possible, was a serious error of judgment. But the positive elements in this technical aid program greatly outweigh the negative. The immediate effects of stimulating the Japanese into action are evident. The ultimate effects of the program are not readily apparent, and it will be some time before a full assessment can be made.

FUTURE PROSPECTS

The foreseeable future of the Japanese animal husbandry is fairly promising despite the handicaps noted in the preceding pages. Nothing spectacular, however, need be anticipated. Given Japan's farm population and area of cultivated land and the enormous food requirements of a rapidly growing population, it is certain that the quantitative, starch-pattern of agricultural production will continue as of old. So long as an acre under rice can produce six to seven times the calories that the same acre can produce as grain fed to animals, protective, animal protein-containing foods will be in short supply. The issue of livestock in Japan, however, is not to make any inroads in the existing cropping system, but merely to supplement it with more and better livestock. Viewed in that light, Japan has the pasture resources, the technical knowledge to improve them, the expert advice provided by SCAP technicians, and greater willingness on the part of more farmers to venture into livestock raising. Very important, too, is the fact that "more livestock" has become a popular political slogan. This means that at least some of the money needed to improve the pasture lands, to assist farmers in the purchase of animals, et cetera, will be forthcoming.

The Legislature and Animal Husbandry

For many months past, members of the Diet, regardless of party affiliation, have been exhibiting a keen interest in the livestock problem. It was less so in the Occupation years when Japan's food deficit was provided by the GARIOA funds to the extent of some $300,000,000 annually. Now that the country itself must foot the import bill for food, which MAF estimates will reach $364,000,000 in 1952, there has been considerable searching of the mind for ways and means of increasing the indigenous food supply. In the Diet discussions much has been said also about better quality foods, and in this connection even national pride came to the fore. Representative Yasomi OGASAWARA (Liberal Party), on the floor of the Diet, on November 26, 1951, said "As a nation which is expected to play in the future an active international role we must get rid of the outlook on the world based on rice and pickled radish." Regardless of what one may think of Mr. Ogasawara's notion of a rice and vegetable diet in relation to world problems, the fact is that he used that as a peg on which to hang a strong appeal for a rejuvenation of the country's livestock industry. In his view, the industry could become a source of all manner of good things: (a) reduce the national food bill by reducing the food deficit; (b) improve the physical condition of the nation; (c) increase manure supply, thereby cutting down on the commercial fertilizer bill; (d) reduce village unemployment, and last but not lease, (f) provide a source of income for the farmers and thus raise their standard of living. Mr. Ogasawara further stated that a 10-year livestock program is what the country needs to realize the above mentioned goals.

His colleagues continued in the same vein. Mr. Hachijiro MITSUHASHI (Socialist Party) talked with sarcasm of what "we had better call our starch producing agriculture." He maintained that "human beings need starch, protein and fats." He proceeded to invoke upon his colleagues the thought that whereas in former times it was said that "there is no agriculture without livestock," now it must be said that "there is no living without livestock." He finished his remarks rather uncritically when, without qualifications, he compared the per capita and per hectare number of cattle in Japan with those of Denmark and Holland; it helped, however, to underscore Japan's lowly position in the field. Germane to the whole discussion is the financial question, and the source of the necessary funds. On this score it was pointed out that to date the government support to the livestock or would-be livestock raisers has been negligible, and that the greater part of the budgetary provisions is devoted to the maintaining of the Livestock Bureau administratively and not on the advancement of the livestock industry. It should be noted that no member of the Diet questioned or debated the issue; there seems to have been general agreement that something must be done about the matter.

Such was the political climate when on November 26, 1951, a group of 22 members of the Diet, representing every Party but the Communist, submitted a joint resolution which read as follows: "In view of the fact that Japan must import several million tons of foodstuffs to meet the growing food deficit, it is urgent to increase food production through an enlarged livestock industry. Therefore, it is requested that the Government take every measure at its disposal to provide financial assistance large enough to enable a million non-livestock raising families to acquire livestock." The resolution was unanimously approved, since Mr. Rintaro YOKOTA, member of the Communist Party, took the floor to state that his Party, too, was supporting the resolution.

The Ten Year Livestock Program

The Livestock Bureau of MAF had a good deal to do with furnishing the material and providing the arguments for an expanded livestock population discussed in the Diet. The Bureau decided to take advantage of the favorable situation and quickly followed up with a ten year livestock program. It is based on the premise that Japan has 3,350,000 farm families without any livestock at all or any adequate number, and that within a 10-year period, 1,270,000 families should acquire animals. There are two phases to the program; the first three years is planned in some detail, but the second phase is yet to be developed, depending upon the results achieved by the end of 1954.

With respect to the first phase, the Livestock Bureau hopes that between 1952 and 1954 approximately 500,000 farm families will have acquired a total of 600,000 head, made up of 25,000 dairy, 100,000 draft cattle, and 25,000 horses. The remainder would consist of sheep, goats and hogs. The total amount of money required for this part of the program is estimated at 8.4 billion yen. An average of 70 percent of this sum will be loaned to the farmers by the Government; the loans will bear an interest rate of 12.5 percent, but five percent of the rate will be covered by a Government subsidy. The period of redemption will vary from three to five years: five years in the case of draft cattle and horses; four years for dairy cattle, and three years for sheep, goats and hogs. The financing is to be done through the Agricultural Central Cooperative Bank and, locally, through the farm cooperatives. It is worth noting that the funds for the first year's operation (2.4 billion yen) have been made available.

Livestock Bureau Budget for 1952

Another favorable straw in the wind is the Bureau's 1952 budget. It amounts to 1.5 billion yen as against 1.2 in 1951. In terms of the Bureau's estimated needs, the increase is not substantial, but the officials feel encouraged with the appropriation granted. A breakdown of the budget by categories shows that in 1952 four times as much money (105 million yen) will be spent for experimentation in improving indigenous types of feed than was the case in 1951. Considerable increase in funds has been granted to expand the work of livestock disease prevention. Important also is the fact that the Livestock Bureau, in the disposition of its funds, continues to lay greater stress on livestock other than horses.

CONCLUSION

The outlined purchase program and the other positive developments already mentioned do not by themselves insure a promising outlook for the livestock industry. The pasture land, breeding and management problems call for continued effort and, above all, effective implementation. More specifically, this means that the Japanese Government through the Ministry of Agriculture and Forestry must encourage animal husbandry through the application of such measures as the creation of a livestock extension service, research work relating to forages, a pasture land use survey to determine the current utilization and condition of the land, and the methods for effecting improvements, emphasis on dual purpose cattle, and long and short term credit with low interest rates to enable the farmers to purchase livestock, feeds, and to improve pastures.

The Livestock Bureau is well aware of what needs to be done to raise animal husbandry in Japan into a stronger position. But the question of whether the Bureau, the farmers and the Japanese Government will contribute in measure sufficient to achieve what is realizable still remains unanswered. What can be said at this juncture, however, is that developments under the Occupation, the attitude of the farmers, of the Livestock Bureau, and of the Diet are creating conditions favoring a more positive and energetic approach to the issue of more and better livestock in Japan. Hence the conclusion that the livestock outlook is promising.

TABLE 3 - Number of Livestock Raisers by Type and Number of Animals, 1949 1/

No. of Animals	Raisers of dairy cattle			Raisers of draft and beef cattle		
	Farmers	Non- 1/ Farmers	Total	Farmers	Non-Farmers	Total
1	97,980	2,311	100,291	1,641,855	14,517	1,656,372
2	21,695	833	22,528	166,733	1,607	168,340
3-4	8,000	659	8,659	25,389	508	25,897
5-9	2,230	441	2,671	2,138	195	2,333
10-19	316	187	503	19	47	66
20-49	65	58	123	1	24	25
50 and more	7	18	25	-	6	6
Total	130,293	4,507	134,800	1,836,135	16,904	1,853,039

No. of Animals	Raisers of Horses			Raisers of Hogs		
	Farmers	Non Farmers	Total	Farmers	Non-Farmers	Total
1	772,601	24,709	797,310	248,901	37,361	286,268
2	74,113	3,856	77,969	37,471	11,066	48,537
3-4	22,373	1,731	24,104	7,977	4,490	12,467
5-9	3,437	678	4,115	2,684	2,082	4,766
10-19	305	228	533	725	727	1,452
20-49	75	68	143	96	237	333
50 and more	7	39	46	8	60	68
Total	872,911	31,209	904,220	297,868	57,475	353,891

No. of Animals	Raisers of Sheep		
	Farmers	Non-Farmers	Total
1	138,503	13,423	151,926
2	47,015	3,910	50,925
3-4	15,226	1,344	16,570
5-9	1,979	270	2,249
10-19	97	62	159
20-49	9	36	45
50 and more	-	21	21
Total	202,829	19,066	221,895

1/ February 1, 1949 Livestock Census.

2/ Non-farmers include the Government, livestock companies, associations and dealers.

SOURCE: Ministry of Agriculture and Forestry.

TABLE 4 - Number of Livestock Raisers by Size of Farm, 1949 (Excluding Hokkaido)

Size of Farms (cho) 1/	Dairy cattle raisers	Pct	Draft and beef cattle raisers	Pct	Horse raisers	Pct	Hog raisers	Pct
Under 0.3	459	0.4	704	0.0	233	0.0	763	0.3
0.3-0.4	19,662	18.4	362,332	19.7	58,521	8.0	74,698	27.1
0.5-0.9	46,584	43.5	859,714	46.8	224,919	30.7	100,293	36.3
1.0-1.9	35,270	33.0	551,172	30.0	347,707	47.5	85,063	30.8
2.0-2.9	4,266	4.0	56,285	3.1	86,710	11.8	13,401	4.9
3.0-4.9	627	0.6	5,630	0.3	14,122	2.0	1,683	0.6
5.0-9.9	88	0.1	237	0.0	388	0.0	84	0.0
10.0 and over	28	0.0	8	0.0	35	0.0	10	0.0
Total	106,984	100.0	1,836,082	100.0	732,635	100.0	275,995	100.0

Size of Farms (cho) 1/	Goat raisers	Pct	Sheep raisers	Pct	Rabbit raisers	Pct
Under 0.3	1,172	0.4	95	0.1	3,594	0.3
0.3-0.4	121,068	38.1	25,201	19.3	393,418	38.4
0.5-0.9	115,232	36.2	46,435	35.5	380,768	37.2
1.0-1.9	69,549	21.9	46,230	35.4	215,920	21.1
2.0-2.9	9,802	3.1	10,857	8.3	21,165	2.7
3.0-4.9	1,227	0.4	1,735	1.3	3,123	0.3
5.0-9.9	56	0.0	104	0.1	104	0.0
10.0 and over	12	0.0	20	0.0	7	0.0
Total	318,118	100.0	130,677	100.0	1,024,099	100.0

1/ One cho equals 2.451 acres.

SOURCE: Ministry of Agriculture and Forestry.

TABLE 5 - Production of Meat by Month, 1950
(Metric tons, carcass weight)

Month	Beef	Veal	Pork	Horse	Goat	Sheep
January	5,199	90	4,176	856	1.0	0.4
February	6,014	132	5,655	731	0.8	0.4
March	5,852	160	5,927	647	1.4	1.1
April	4,904	152	5,149	580	1.5	1.5
May	4,265	179	4,763	473	1.0	2.7
June	5,158	196	4,486	524	3.3	2.7
July	6,265	255	5,195	709	0.9	1.4
August	7,648	249	4,306	1,109	1.3	2.6
September	7,814	230	3,807	1,436	2.0	5.9
October	7,666	206	3,678	1,610	4.2	5.3
November	7,156	188	4,198	1,697	3.5	13.3
December	8,668	183	5,674	2,240	5.9	13.9
Total	76,609	2,218	57,014	12,612	26.8	51.2

TABLE 6 - Production of Meat by Month, 1951
(Metric tons, carcass weight)

Month	Beef	Veal	Pork	Horse	Goat	Sheep
January	7,303	157	4,234	1,644	4.2	3.3
February	6,315	135	3,861	1,540	4.1	3.7
March	5,964	120	3,553	1,476	5.5	6.1
April	5,198	125	3,389	1,249	6.8	4.6
May	4,254	124	3,332	1,055	7.0	3.5
June	4,507	118	3,294	1,142	15.8	5.5
July	4,907	135	3,621	1,321	21.8	4.0
August	4,833	141	3,701	1,186	35.3	9.1
September	5,439	131	3,903	1,341	56.4	7.0
October	4,547	170	3,920	4,401	49.9	3.6
November-December not available						
Total	53,267	1,356	36,808	15,355	206.8	50.4

SOURCE: Tables 5 and 6 - Food Agency, Ministry of Agriculture and Forestry.

TABLE 7 - Supply and Consumption of Various Types of Meat (April, 1950-March, 1951)

Type	Production (1,000 MT)	Waste (1,000 MT)	Per Capita Consumption				
			Per Year (kg)	Per day (gm)	Calories per day (cal)	Protein per day (gm)	Fat per day (gm)
Beef	81	20	1.0	2.7	3.5	0.5	0.2
Pork	49	10	0.5	1.3	1.9	0.3	0.1
Horse meat	17	4	0.2	0.4	0.5	0.1	0.0
Chicken	12	3	0.1	0.3	0.4	0.1	0.0
Rabbit	3	0	0.0	0.1	0.1	0.0	0.0

SOURCE: Economic Stabilization Board.

TABLE 8 - Imports of Livestock and Livestock Products, 1950

Item	Unit	Quantity	Value,CIF (1,000 yen) 1/
Cattle	Head	4	4,680
Sheep	Head	516	19,301
Goat	Head	1	191
Sheep and goat fur	Piece	5,523	3,411
Other fur	Piece	418	510
Cattle and buffalo hide	Ton	34,540	4,159,867
Other hide	Ton	242	102,869
Wool	Ton	33,049	19,692,316
Goat and camel hair	Ton	108	126,001
Horn	Ton	195	9,611
Animal born	Ton	2	336
Beef (fresh, dried, smoked or salted)	Ton	16	2,626
Canned animal and fowl meat	Ton	266	48,945
Other meat	Ton	4	1,664
Sweet condensed milk	Ton	16	2,404
Condensed milk with no sugar	Ton	80	9,534
Powdered milk	Ton	12,561	420,389
Butter	Ton	27	14,514
Cheese	Ton	16	6,777

1/ One U.S. dollar equals 360 yen.

SOURCE: Customs Bureau, Ministry of Finance.

TABLE 9 - Government Plan for Increase of Livestock, 1952-54

	Unit	1952	1953	1954	Total
Number of additional farms with livestock	1,000 households	204	154	140	498
Dairy cattle	1,000 head	10	11	13	34
Draft-beef cattle	1,000 head	55	28	23	106
Horses	1,000 head	11	8	5	24
Sheep	1,000 head	42	53	66	161
Goats	1,000 head	41	45	40	126
Hogs	1,000 head	73	48	28	148

SOURCE: Ministry of Agriculture and Forestry.

APPENDIX 1

LIVESTOCK DISEASES IN JAPAN

1. Horses

Principal Diseases:
Equine infectious anemia, equine paratyphus, anthrax, equine encephalitis, and rabies.

Other Infectious Diseases:
Phlegmon, strangles, tetanus, parastici diseases, salmonellosis and purples.

Diseases of Digestive Organs
Colic, acute and chronic gastrointestinal catarrh, gastroenteritis, peritonitis, dilation of stomach, and alveolar periostitis.

Diseases of Respiratory Organs
Pneumonia, pulmonary hyperomier, broken wind, and pleuritis.

Diseases of Circulatory Organs
Endocarditis, heart value disease, pericarditis, myocarditis, and aneurysm

Disturbances of Metabolism
Osteomalacia and poisoning

Diseases of Urogenital Organs
Endometritis, uterine prolapse, uterine rupture and vaginal prolapse

Diseases of Locomotion
Myositis, muscular tear, periostitis, fracture, tendinitis, arthritis, luxation and torsion.

Diseases of Nervous System
Lumbar paralysis, carelrospinal meningitis, sunstroke, and heatstroke.

Diseases of Hoof
Laminitis, thrush, Vernagelung, Nageltritt, Lose Want, and Hohle Want.

2. Cattle (Dairy Cattle and Draft and Beef Cattle)

Principal Diseases
Influenza, cattle tuberculosis, trichomoniasis, brucellosis, piroplasmosis, anthrax, black leg, encephalitis, rabies, and hemorrhagic septicemia.

Other Infectious Diseases
Leptospirosis, herpes, and infectious granular vaginitis

APPENDIX 1 (Continued)

Diseases of Digestive Organs
Tympanitis, constipation and esophageal infarct.

Diseases of Urogenital Organs
Uterine prolapse, mastitis, Endometritis, ovarian cyst, postpuerperal paralysis, and retained placenta.

Disturbances of Metabolism
Osteomalacia and poisoning

3. Sheep

Lumbar payalysis, internal parasites, scabies, brucellosis, hemorrhagic septicemia, tympanitis, gastrointestinal catarrh, prepuerperal paralysis, acute pulmonary emphysener (sunstroke and heatstroke), mastitis, and poisoning.

4. Goat

Lumbar paralysis, tympanitis, parasitic diseases, prepuerperal paralysis, gastrointestinal catarrh, poisoning, mastitis, colculus urethralis, acute pulmonary emphysema.

5. Swine

Principal Diseases
Hog cholera, swine erysipelas, hemorrhagic septicemia, encephalitis, anthrax, and swine paratyphus.

Diseases of Digestive Organs
Constipation and gastroenteritis

Other Diseases
Poisoning, parasitosis, and vesicular dermatitis.

6. Rabbit

Coccidiosis, intestinal catarrh, diarrhea, tympanitis, snuffles, pneumonia, lumbar paralysis, impaction, disease of buscal cavity, scabies of ear, cysticercosis, spirocheotosis.

7. Fowl

Infectious Diseases
Fowl cholera, fowl pest, avian diphtheria, fowl pox, white diarrhea of chicken, Newcastle disease and scabies.

Other Diseases
Liver rupture, beriberi, and catarrh of intestine

SOURCE: Livestock Bureau, Ministry of Agriculture and Forestry.

APPENDIX 2

TYPES OF INFECTIOUS DISEASES OF ANIMALS AND NUMBER OF REPORTED CASES
(January-November 1951)

Disease	Number of Cases
Influenza	45,925
Encephalitis (cattle)	1
(horse)	273
Rabies (cattle)	3
(horse)	8
(sheep)	1
Anthrax (cattle)	10
Black leg	2
Brucellosis	16
Tuberculosis	865
Piroplasmosis	18
Trichomoniasis	859
Infectious anemia	7,975
Equine paratyphus	445
Hog cholera	2,248
Swine erysiphelas	502
Newcastle disease	20,655
White diarrhea of chicken	79,448

SOURCE: Livestock Bureau, Ministry of Agriculture and Forestry.

APPENDIX 3

DIRECTORS AND ADDRESSES OF GOVERNMENT EXPERIMENT STATIONS FOR ANIMAL HYGIENE

1. Masayochi Kobayashi, Director,
   Main Station of the Government Experimental Station of Animal Hygiene,
   Nishigahara-machi- Kita-ku, Tokyo.

2. Ryosaku Irie, Head,
   Hokkaido Branch Station of the Government Experimental Station of Animal Hygiene,
   Nakanoboribetsu, Horobetsu-mura, Horobetsu-gun, Hokkaido.

3. Akihiko Toba, Head,
   Tohoku Branch Station of the Government Experimental Station of Animal Hygiene,
   Nanae-machi, Kamikita-gun, Aomori-ken.

4. Nobuyuki Yoshida, Head,
   Hokuriku Branch Station of the Government Experimental Station of Animal Hygiene,
   Kashiwazaki-shi, Niigata-ken.

5. Morimatus Watanabe, Head,
   Chugoku Branch Station of the Government Experimental Station of Animal Hygiene,
   Tamaki, Wadayama-machi, Asako-gun, Hyogo-ken.

6. Kanematsu Fukusho, Head,
   Kyushu Branch Station of the Government Experimental Station of Animal Hygiene,
   Wada, Tamiyama-machi, Kagoshima-gun, Kagoshima-ken.